

ABSTRACT

A multivalued magnetoresistive read/write memory and method of writing to and reading from such a memory. The invention has, *inter alia*, one or more storage cells, each storage cell having two intersecting electric conductors and a layer system comprising magnetic layers located at the intersection of the electric conductors. The memory is characterized in that the layer system is designated as a multilayer system with two or more magnetic layers, wherein at least two of the magnetic layers have a magnetization direction that can be set independently of one another. Further, the magnetization direction of the individual layers may be changed on the basis of the electric current flowing through the electric conductors.